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# DEPARTMENT OF DEFENSE INTERFACE STANDARD

TRANSPORTABLE FILE STRUCTURE (TFS)

FOR THE  
NATIONAL IMAGERY TRANSMISSION FORMAT STANDARD



AMSC N/A

AREA INST

## FOREWORD

1. This standard is approved for use by all departments and agencies of the Department of Defense (DOD).
2. The National Imagery Transmission Format Standard (NITFS) is the suite of standards for formatting digital imagery and imagery-related products and exchanging them among the DOD, other Intelligence Community (IC) members as defined by the Executive Order 12333, and other United States Government departments and agencies.
3. The NITFS Technical Board (NTB) developed this standard based upon currently available technical information.
4. The DOD and other IC members are committed to the interoperability of systems used for formatting, transmitting, receiving, and processing imagery and imagery-related information. This standard describes the Transportable File Structure (TFS) implementation and establishes its application within the NITFS.
5. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to the National Imagery and Mapping Agency, Interoperability Branch (SEII), 14675 Lee Road, Chantilly, VA 20151-1715 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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## 1. SCOPE

1.1 Scope. This standard establishes the requirements necessary to implement Transportable File Structure (TFS) used for the representation of image-related object data in the National Imagery Transmission Format Standard (NITFS).

1.2 Content. This standard provides technical details of Transportable File Structure (TFS) commands, formats, and implementation.

1.3 Applicability. This standard is applicable to the Department of Defense (DOD) and the Intelligence Community (IC). This standard defines the metafile for image-related data objects within the NITFS. When image-related object data are to be associated with NITFS, this standard is mandatory for all Secondary Imagery Dissemination Systems (SIDS) in accordance with the memorandum by the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD(C3I)), Subject: National Imagery Transmission Format Standard (NITFS), 12 August 1991. This standard shall be implemented in accordance with the Joint Interoperability and Engineering Organization (JIEO) Circular 9008 and MIL-HDBK-1300. New equipment and systems, those undergoing major modification, or those capable of rehabilitation shall conform to this standard when required to transmit imagery-related object data.

1.4 Tailoring task, method, or requirement specifications. The minimum compliance requirements for implementation of TFS are defined in JIEO Circular 9008.

## 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, and 5 of this standard. This section does not include documents cited in other sections of this standard or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3, 4, and 5 of this standard, whether or not they are listed.

### 2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issue of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

## STANDARDS

### FEDERAL

FED-STD-1037 - Telecommunications: Glossary of Telecommunication Terms

### DEPARTMENT OF DEFENSE

MIL-STD-2500 - National Imagery Transmission Format (Version 2.0) for the National Imagery Transmission Format Standard

### DEPARTMENT OF DEFENSE HANDBOOK

MIL-HDBK-1300 - National Imagery Transmission Format Standard

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DEFENSE INFORMATION SYSTEMS AGENCY PUBLICATION

JIEO Circular 9008 - NITFS Certification Test and Evaluation Program Plan.

(Requests for copies should be addressed to the Joint Interoperability Test Command, Building 57305, Fort Huachuca, AZ 85613-7020.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues or documents not listed in the DODISS are the issues or the documents cited in the solicitation.

INTERNATIONAL ORGANIZATION FOR STANDARDS

ISO 10646, Part 1 - Information Technology - Universal Multiple-Octet Coded Character Set (UCS), Architecture and Basic Multilingual Planes

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI X3.4 - 1986 - American National Standard Code for Information Interchange (ASCII), 1986

(Applications for copies should be addressed to the American National Standards Institute, 13th Floor, 11 West 42nd Street, New York, NY 10036.)

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. DEFINITIONS

3.1 Acronyms used in this standard. The acronyms used in this standard are defined as follows:

- a. ANSI - American National Standards Institute
- b. ASCII - American Standard Code for Information Interchange

|             |   |   |
|-------------|---|---|
| c. ASD(C3I) | - | Assistant Secretary of Defense for Command, Control, Communications, and Intelligence |
| d. C3I      | - | Command, Control, Communications, and Intelligence                                    |
| e. CPL      | - | Command Parameter Length  |
| f. DES      | - | Data Extension Segment  |
| g. DOD      | - | Department of Defense   |
| h. DODISS   | - | Department of Defense Index of Specifications and Standards                           |
| i. FTP      | - | File Transfer Protocol  |
| j. HTTP     | - | Hypertext Transfer Protocol   |
| k. IC       | - | Intelligence Community  |
| l. ISO      | - | International Organization for Standards  |
| m. JIEO     | - | Joint Interoperability and Engineering Organization                                   |
| n. LSB      | - | Least Significant Bit   |
| o. MSB      | - | Most Significant Bit  |
| p. NITF     | - | National Imagery Transmission Format  |
| q. NITFS    | - | National Imagery Transmission Format Standard   |
| r. NTB      | - | NITFS Technical Board   |
| s. SIDS     | - | Secondary Imagery Dissemination System  |
| t. TFS      | - | Transportable File Structure  |
| u. TS       | - | TFS State   |
| v. TSS      | - | TFS Substate  |
| w. UCS      | - | Universal Multiple Octet Coded Character Set  |
| x. URL      | - | Uniform Resource Locator  |

3.2 Definitions. Definitions of terms used in this standard are as follows.

3.2.1 Command. A command is a TFS statement that denotes a state to act upon when the TFS is read sequentially.



3.2.2 Metadata. Data used to describe data.

3.2.3 Parameter. A parameter is a representation of data which elaborates the content of a command.

3.2.4 Transportable file structure (TFS). The TFS is a set of commands which defines the metafile for the transport of image related object data. The TFS is contained in the data field of the "TRANSPORTABLE FILE STRUC" Data Extension Segment (DES) of the NITF.

3.3 Data types. Data types used in this standard are as follows.

3.3.1 Character. A letter, digit, or other symbol that is used as part of the organization, control, or representation of data. For this standard, a character (ISO 10646, Part 1 Basic Character Set - Alphanumeric or ANSI 3.4-1986 7-bit ASCII code padded into 8 bits) is represented by an unsigned integer between and including 32 and 126. Characters are often denoted in this document as members of an array C1, C2, ... Cn.

3.3.2 Integer parameters. All integer parameters used in this standard are 16-bit two's complement signed integers except where specified. Each 16-bit word is numbered from most significant bit to least significant bit using 15 to zero, as illustrated in figure 1. When a 16-bit two's complement integer is used as a parameter in a TFS metafile, the high order byte of the integer is represented as the 8 most significant bits. That is, bits 15 through 8. Bits 7 through zero represent the low order byte of the integer. Note, this also is known as the "Big-Endian" or "Network Byte Order" representation for 16-bit integers.

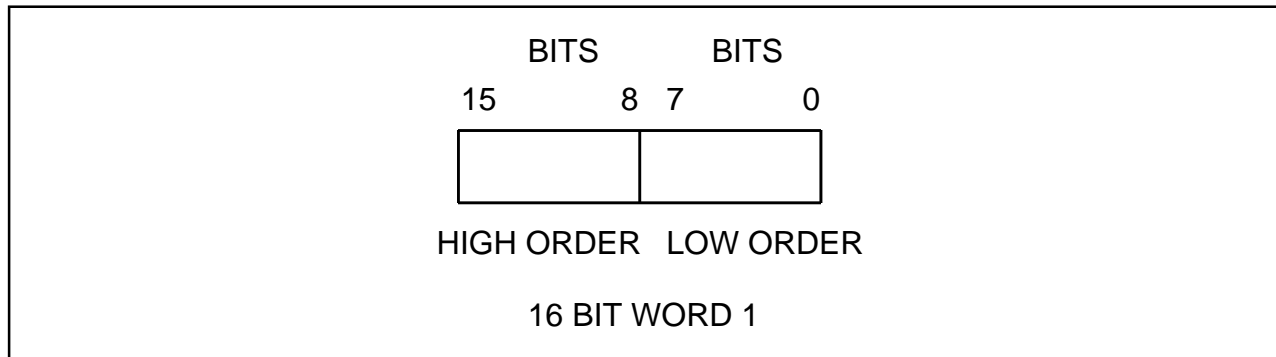
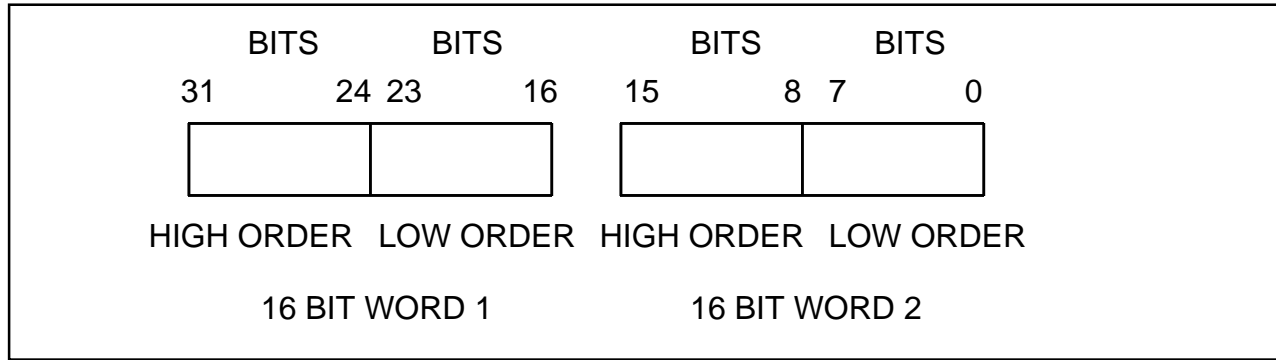
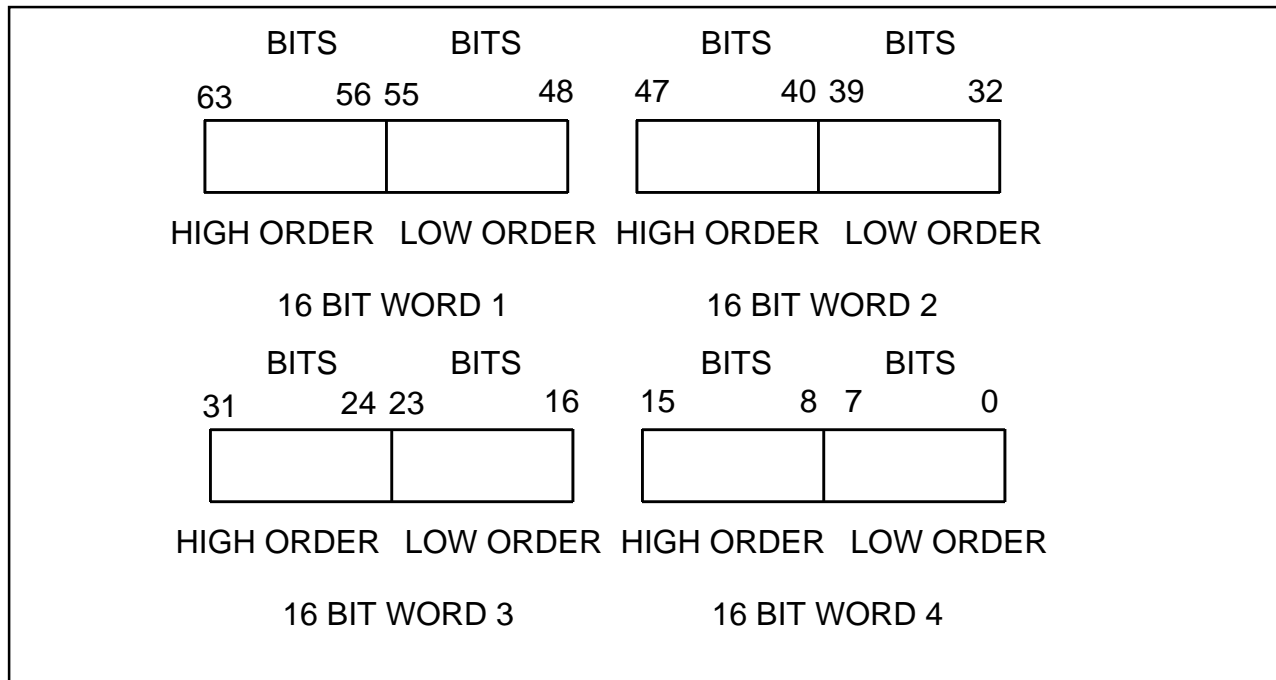


FIGURE 1. Integer parameters.

3.3.3 Long parameters. All long parameters used in this standard are 32-bit two's complement signed integers. When a long integer is used as a parameter in a TFS metafile, the high order byte of the long integer is represented as bits 15 through 8 of the first 16-bit word. Bits 7 through zero of word two represent the low order byte of the long integer, as illustrated in figure 2. Note, this also is known as the "Big-Endian" or "Network Byte Order" representation for long integers.

FIGURE 2. Long parameters.

3.3.4 Real parameters. All real parameters used in this standard are 64-bit IEEE real numbers except where specified. Each 64-bit real is packed into four 16 bit words numbered from most significant bit to least significant bit, as illustrated in figure 3. Note, this also is known as the "Big-Endian" or "Network Byte Order" representation for IEEE 64-bit reals.

FIGURE 3. Real parameters.

3.3.5 String parameter. A character string in a TFS command is represented by a numeric byte value called length (0 through 254) followed by a sequence of characters of the given length: LENGTH, C1, C2, ... Cn (where n is the byte value of LENGTH). All strings begin on a 16-bit word boundary. If the string does not end on a 16-bit word boundary a single ASCII null byte with (0) shall be appended to the end of the string. The value of LENGTH shall not include the appended byte.

#### 4. GENERAL REQUIREMENTS

4.1 General. The TFS provides the capability to represent data, data relations, data hierarchy, processing configuration, and processing commands associated with all-source image-related data. It is intended for use as a transmission and storage format between two or more computer systems. The TFS is transmitted in the DATA area of the Data Extension Segment "TRANSPORTABLE FILE STRUCT" as part of an NITF file. The TFS shall either contain data for the objects or provide the computer system with an unambiguous reference to the data. The TFS shall provide a format such that the image-related data from one data processing system can be reconstructed in the same data topology with no loss of content for use as image-related data on another such system. With this, the TFS will provide a common basis to share not only all-source data, which may be stored throughout an NITF file, but also the associations between the data, multiple interpretations of the data, fused results using the data, and abstractions of the data.

4.2 TFS overview. Image-related object data can be stored in a hierarchical order with metadata associated for each level in the hierarchy. Major sections of the TFS are delimited with TFS Delimiter commands. The TFS can be parsed using a state machine. The initial state of the TFS is the TFS state. The TFS Descriptor commands describing the overall structure of the TFS, the TFS version, metadata, security, subscription, configuration, and an index into the TFS transports are found in this state. The next state of the TFS is the Transport state. The Transport Descriptor commands describe the security, metadata, and index into the Transport Body components. Within the Transport Body the TFS enters one or more Profile states. The Profile Descriptor commands describe the security, metadata, and index for each Profile state. The Profile Body contains objects, actions, or other nested Profiles. Profile objects contain object data formatted according to the object type. The object data may contain an unambiguous reference to data stored elsewhere, such as in the NITF file, or contain the actual data. More than one profile can be contained within a Transport Body and the TFS metafile can contain more than one Transport. Furthermore, profiles can be nested to create hierarchical structures. Each TFS Metafile, Transport, and Profile state contains security, metadata, and an index into the next hierarchical level to provide for multi-level secure data. The TFS Escape state provides a mechanism for the insertion of application defined data. The TFS Escape state terminates upon completion of the TFS Escape command. All other states have a begin state and an end state.

4.3 TFS commands. The following describes TFS commands grouped by command class. The delimiter commands change the TFS state. The descriptor commands provide data within each state.

- a. TFS Delimiter Commands
  - BEGIN TFS
  - BEGIN TRANSPORT
  - BEGIN TRANSPORT BODY
  - BEGIN PROFILE
  - BEGIN PROFILE BODY
  - END PROFILE
  - END TRANSPORT
  - END TFS
- b. TFS Descriptor Commands
  - TFS VERSION
  - TFS SECURITY
  - TFS METADATA
  - TFS INDEX

TFS SUBSCRIPTION  
TFS CONFIGURATION  
TFS CONFIG DATA

- c. Transport Descriptor Commands
  - TRANSPORT SECURITY
  - TRANSPORT METADATA
  - TRANSPORT INDEX
- d. Profile Descriptor Commands
  - PROFILE SECURITY
  - PROFILE METADATA
  - PROFILE INDEX
- e. Profile Commands
  - PROFILE ACTION
  - PROFILE OBJECT
- f. TFS User Commands
  - TFS ESCAPE

4.4 TFS encoding. Each TFS command is identified by the combination of the TFS State (TS) and TFS Substate (TSS) fields which comprise the first 2 bytes of the command. The identification is followed by 2 or 4 bytes called the Command Parameter Length (CPL) specifying the length of the balance of the command. The balance of the command is a series of parameters whose content depends upon the identity of the command. The TFS commands are encoded in binary form. The 8 most significant bits (MSB) of the first word identify the TFS state in which the command belongs. The 8 least significant bits (LSB) specify the TFS substate of the command. The next 2 bytes are interpreted as a signed positive integer containing the length, the CPL, of the command parameters. The TS, TSS, and CPL are required for all commands. Parameters are padded with a trailing null byte (0) to ensure that all subsequent commands begin on a 16-bit word boundary. The trailing null byte of the last parameter is not included in the parameter list length. If the CPL is greater than 32,767, then the CPL shall be two 16-bit words long with the MSB of the high order byte (word 1) set to 1. The value of the CPL is that of the remaining 31 bits in the two words, and can contain values up to one gigabyte (1,073,741,823) for the full CPL. Note: when the TFS is embedded inside a DES, the NITF file size, including the TFS, must not exceed the maximum size required for the given level of certification. Tables are used to describe commands that contain parameters. In the tables and figures contained in this standard the numbers are in hexadecimal notation.

TABLE I. Encoding of a TFS command.

| MSB                            |    |    |    |    |    |   |   |                    |   |   |   |   |   | LSB |   |
|--------------------------------|----|----|----|----|----|---|---|--------------------|---|---|---|---|---|-----|---|
| 15                             | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7                  | 6 | 5 | 4 | 3 | 2 | 1   | 0 |
| TFS State (TS)                 |    |    |    |    |    |   |   | TFS Substate (TSS) |   |   |   |   |   |     |   |
| Command Parameter Length (CPL) |    |    |    |    |    |   |   |                    |   |   |   |   |   |     |   |
| command parameters             |    |    |    |    |    |   |   |                    |   |   |   |   |   |     |   |
| .                              |    |    |    |    |    |   |   |                    |   |   |   |   |   |     |   |
| .                              |    |    |    |    |    |   |   |                    |   |   |   |   |   |     |   |
| .                              |    |    |    |    |    |   |   |                    |   |   |   |   |   |     |   |

4.5 TFS command flow. The following flow diagram displays all the TFS commands contained in a metafile. The commands are executed in sequential order. The TFS Descriptor commands occur after the BEGIN TFS command and before the BEGIN TRANSPORT command. The Transport Body Descriptor commands occur after the BEGIN TRANSPORT command and before the BEGIN TRANSPORT BODY command. The Profile Descriptor commands occur after the BEGIN PROFILE command and before the BEGIN PROFILE BODY command. The Profile commands occur after the BEGIN PROFILE BODY command and before the END PROFILE command. BEGIN PROFILE and associated commands can be nested within profiles. The TFS ESCAPE command can occur at any position in the TFS where any other command can occur except the BEGIN TFS and END TFS commands. The commands enclosed within matching brackets are optional within a given metafile.

BEGIN TFS

|                     |  |                         |
|---------------------|--|-------------------------|
| TFS VERSION         |  |                         |
| TFS SECURITY        |  |                         |
| [TFS METADATA]      |  |                         |
| [TFS INDEX]         |  | TFS Descriptor Commands |
| [TFS SUBSCRIPTION]  |  |                         |
| [TFS CONFIGURATION] |  |                         |
| [TFS CONFIG DATA]   |  |                         |

[BEGIN TRANSPORT

|                      |  |                               |
|----------------------|--|-------------------------------|
| TRANSPORT SECURITY   |  |                               |
| [TRANSPORT METADATA] |  | Transport Descriptor Commands |
| [TRANSPORT INDEX]    |  |                               |

BEGIN TRANSPORT BODY Required for each BEGIN TRANSPORT

[BEGIN PROFILE

|                    |  |                             |
|--------------------|--|-----------------------------|
| PROFILE SECURITY   |  |                             |
| [PROFILE METADATA] |  | Profile Descriptor Commands |
| [PROFILE INDEX]    |  |                             |

BEGIN PROFILE BODY Required for each BEGIN PROFILE

[PROFILE ACTION]  
[PROFILE OBJECT]

|                |  |                  |
|----------------|--|------------------|
| [BEGIN PROFILE |  |                  |
| ...            |  | Embedded Profile |
| END PROFILE]   |  |                  |

END PROFILE]

END TRANSPORT]

...  
[BEGIN TRANSPORT

...  
END TRANSPORT]

END TFS

## 5. DETAILED REQUIREMENTS

5.1 Interface requirements. The following subsections list the required TFS commands along with the encoding.

5.1.1 TFS delimiter commands. The TFS Delimiter commands define boundaries for significant structures within the TFS.

5.1.1.1 TFS delimiter command table. The following table defines the TS, TSS, and the CPL for the TFS Delimiter commands. The value x for CPL indicates that a non zero value shall be used if there is data supplied with the command.

TABLE II. TFS delimiter command.

| TFS COMMAND NAME     | TS | TSS | CPL |
|----------------------|----|-----|-----|
| BEGIN TFS            | 10 | 1   | x   |
| BEGIN TRANSPORT      | 10 | 2   | x   |
| BEGIN TRANSPORT BODY | 10 | 3   | 0   |
| BEGIN PROFILE        | 10 | 4   | x   |
| BEGIN PROFILE BODY   | 10 | 5   | 0   |
| END PROFILE          | 10 | 6   | 0   |
| END TRANSPORT        | 10 | 7   | 0   |
| END TFS              | 10 | 8   | 0   |

5.1.1.2 Begin TFS command format. The BEGIN TFS command shall have non zero values for CPL if it has parameter data. In this case, the parameter is a name associated with the TFS file. This name is represented using the character string C1, C2, ... Cn with length n. The following tables describe the even and odd format with  $x = n+1$ .

TABLE III. Begin TFS command even form.

| MSB               |    |    |    |    |    |   |   |       |   |   |   |   |   | LSB |   |
|-------------------|----|----|----|----|----|---|---|-------|---|---|---|---|---|-----|---|
| 15                | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7     | 6 | 5 | 4 | 3 | 2 | 1   | 0 |
| TS                |    |    |    |    |    |   |   | TSS   |   |   |   |   |   |     |   |
| CPL = n+1         |    |    |    |    |    |   |   |       |   |   |   |   |   |     |   |
| length = n (even) |    |    |    |    |    |   |   | C1    |   |   |   |   |   |     |   |
| C2                |    |    |    |    |    |   |   | . . . |   |   |   |   |   |     |   |
| Cn                |    |    |    |    |    |   |   | 0     |   |   |   |   |   |     |   |

TABLE IV. Begin TFS command odd form.

| MSB              |    |    |    |    |    |   |   |     |   |   |   |   |   | LSB |   |
|------------------|----|----|----|----|----|---|---|-----|---|---|---|---|---|-----|---|
| 15               | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7   | 6 | 5 | 4 | 3 | 2 | 1   | 0 |
| TS               |    |    |    |    |    |   |   | TSS |   |   |   |   |   |     |   |
| CPL = n+1        |    |    |    |    |    |   |   |     |   |   |   |   |   |     |   |
| length = n (odd) |    |    |    |    |    |   |   | C1  |   |   |   |   |   |     |   |
| C2               |    |    |    |    |    |   |   | ... |   |   |   |   |   |     |   |
| C(n-1)           |    |    |    |    |    |   |   | Cn  |   |   |   |   |   |     |   |

5.1.1.3 Begin transport command format. The BEGIN TRANSPORT command shall have non zero values for CPL if it has parameter data. In this case, the parameter is a name associated with the receiver of the transport data. This name is represented using the character string C1, C2, ... Cn with length n and conforms to the same format as the Begin TFS command with associated TS and TSS and non zero CPL; see tables III and IV.

5.1.1.4 Begin transport body command format. The BEGIN TRANSPORT BODY command conforms to the same format as the Begin TFS commands with associated TS and TSS and zero CPL; see tables III and IV.

5.1.1.5 Begin profile command format. The BEGIN PROFILE command shall have non zero values for CPL if it has parameter data. In this case, the parameter is a name associated with the profile. This name is represented using the character string C1, C2, ... Cn with length n and conforms to the same format as the Begin TFS command with associated TS and TSS and non zero CPL; see tables III and IV.

5.1.1.6 Begin profile body command format. The BEGIN PROFILE BODY command conforms to the same format as the Begin TFS command with associated TS and TSS and zero CPL; see tables III and IV.

5.1.1.7 End profile command format. The END PROFILE command conforms to the same format as the Begin TFS command with associated TS and TSS and zero CPL; see tables III and IV.

5.1.1.8 End transport command format. The END TRANSPORT command conforms to the same format as the Begin TFS command with associated TS and TSS and zero CPL; see tables III and IV.

5.1.1.9 End TFS command format. The END TFS command conforms to the same format as the Begin TFS command with associated TS and TSS and zero CPL; see tables III and IV.

5.1.2 TFS descriptor commands. The TFS Metafile Descriptor commands describe the functional content, security, and characteristics of the TFS.



5.1.2.1 TFS descriptor command table. The following table defines the TS, TSS, and the CPL for the TFS Descriptor commands. The value x for CPL indicates that a non zero value shall be used if there is data supplied with the command. The value 2 for CPL indicates that the CPL value is 2.

TABLE V. TFS descriptor command.

| TFS COMMAND NAME  | TS | TSS | CPL |
|-------------------|----|-----|-----|
| TFS VERSION       | 20 | 1   | 2   |
| TFS SECURITY      | 20 | 2   | x   |
| TFS SUBSCRIPTION  | 20 | 3   | x   |
| TFS CONFIGURATION | 20 | 4   | 2   |
| TFS CONFIG DATA   | 20 | 5   | x   |
| TFS METADATA      | 20 | 6   | x   |
| TFS INDEX         | 20 | 7   | x   |

5.1.2.2 TFS version command format. The following is the TFS VERSION command format. The VERSION shall be an integer and shall be the value 1.

TABLE VI. TFS version command.

| MSB     |    |    |    |    |    |   |   |     |   |   |   |   |   | LSB |   |
|---------|----|----|----|----|----|---|---|-----|---|---|---|---|---|-----|---|
| 15      | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7   | 6 | 5 | 4 | 3 | 2 | 1   | 0 |
| TS      |    |    |    |    |    |   |   | TSS |   |   |   |   |   |     |   |
| CPL     |    |    |    |    |    |   |   |     |   |   |   |   |   |     |   |
| VERSION |    |    |    |    |    |   |   |     |   |   |   |   |   |     |   |

5.1.2.3 TFS security command format. The TFS SECURITY command conforms to the same format as the TFS Delimiter commands with associated TS and TSS and non zero CPL; see tables III and IV.

5.1.2.4 TFS subscription command format. The following is the TFS SUBSCRIPTION command format. The SUBSCRIPTION value is 0 to subscribe to data objects, 1 for a data pull, and 2 to cancel subscription. Each subscription service consists of an unsigned 8-bit service name length followed by a character name. Each character name shall be in the form "name=identifier."

TABLE VII. TFS subscription command.

| MSB          |    |    |    |    |    |   |   |     |   |   |   |   |   |   | LSB |  |
|--------------|----|----|----|----|----|---|---|-----|---|---|---|---|---|---|-----|--|
| 15           | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7   | 6 | 5 | 4 | 3 | 2 | 1 | 0   |  |
| TS           |    |    |    |    |    |   |   | TSS |   |   |   |   |   |   |     |  |
| CPL          |    |    |    |    |    |   |   |     |   |   |   |   |   |   |     |  |
| SUBSCRIPTION |    |    |    |    |    |   |   |     |   |   |   |   |   |   |     |  |
| length = a   |    |    |    |    |    |   |   | C1  |   |   |   |   |   |   |     |  |
| C2           |    |    |    |    |    |   |   | ... |   |   |   |   |   |   |     |  |
| Ca           |    |    |    |    |    |   |   | ... |   |   |   |   |   |   |     |  |
| length = b   |    |    |    |    |    |   |   | C1  |   |   |   |   |   |   |     |  |
| C2           |    |    |    |    |    |   |   | ... |   |   |   |   |   |   |     |  |
| Cb           |    |    |    |    |    |   |   | ... |   |   |   |   |   |   |     |  |

5.1.2.4.1 TFS subscription command contents. The following table describes the contents for the TFS Subscription command. Each command is of the form "name=identifier." The URL identifier determines how to send the TFS to the subscriber. The OBJECT\_NAME identifier determines how the TFS objects are to be stored.

TABLE VIII. TFS subscription contents.

| NAME        | IDENTIFIER   |
|-------------|--|
|             |  |
| USERNAME    | Login Name   |
| PASSWORD    | Login Password   |
| HOSTNAME    | Computer Host Name or IP Address   |
| URL         | URL identifier - What transfer to use to deliver the TFS<br>E-MAIL, FTP, HTTP, ASYNCHRONOUS, etc.  |
| DIRECTORY   | Directory where TFS is to be deposited   |
| FILENAME    | File name to use when depositing the TFS in above directory  |
| OBJECT_NAME | How object data is to be stored<br>0=METADATA ONLY - no object data<br>1=TFS - object data stored in TFS or NITF<br>2=URL - TFS string pointing to object data |

5.1.2.5 TFS configuration command format. The following is the TFS CONFIGURATION command format. The CONFIGURATION value is 0 to provide configuration and 1 to request configuration. Note, if the CONFIGURATION value is 0 then the METAFILE CONFIG DATA command is required.

TABLE IX. TFS configuration command.

| MSB           |    |    |    |    |    |   |   |     |   |   |   |   |   | LSB |   |
|---------------|----|----|----|----|----|---|---|-----|---|---|---|---|---|-----|---|
| 15            | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7   | 6 | 5 | 4 | 3 | 2 | 1   | 0 |
| TS            |    |    |    |    |    |   |   | TSS |   |   |   |   |   |     |   |
| CPL           |    |    |    |    |    |   |   |     |   |   |   |   |   |     |   |
| CONFIGURATION |    |    |    |    |    |   |   |     |   |   |   |   |   |     |   |

5.1.2.6 TFS configuration data command format. The following is the TFS CONFIG DATA command format. Each configuration service consists of an unsigned 8 bit service name length followed by the configuration service name. This command is supplied by a subscriber when the TFS configuration command CONFIGURATION value is 0 and supplied to a subscriber upon request. Each configuration service name shall be in the form "OBJECT\_NAME=service" where OBJECT\_NAME is a valid object name to be used in the TFS and service is the required program to execute for that object.

TABLE X. TFS configuration data command.

| MSB        |    |    |    |    |    |   |   |     |   |   |   |   |   |   | LSB |  |
|------------|----|----|----|----|----|---|---|-----|---|---|---|---|---|---|-----|--|
| 15         | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7   | 6 | 5 | 4 | 3 | 2 | 1 | 0   |  |
| TS         |    |    |    |    |    |   |   | TSS |   |   |   |   |   |   |     |  |
| CPL        |    |    |    |    |    |   |   |     |   |   |   |   |   |   |     |  |
| length = a |    |    |    |    |    |   |   | C1  |   |   |   |   |   |   |     |  |
| C2         |    |    |    |    |    |   |   | ... |   |   |   |   |   |   |     |  |
| Ca         |    |    |    |    |    |   |   | ... |   |   |   |   |   |   |     |  |
| length = b |    |    |    |    |    |   |   | C1  |   |   |   |   |   |   |     |  |
| C2         |    |    |    |    |    |   |   | ... |   |   |   |   |   |   |     |  |
| Cb         |    |    |    |    |    |   |   | ... |   |   |   |   |   |   |     |  |
|            |    |    |    |    |    |   |   |     |   |   |   |   |   |   |     |  |

5.1.2.7 TFS metadata command format. The TFS METADATA command conforms to the same format as the TFS Delimiter commands with associated TS and TSS and non zero CPL; see tables III and IV.

5.1.2.8 TFS index command format. The TFS INDEX command provides a quick entry into the transports of the TFS. The NUMBER\_OF\_INDEXES field is an integer field that specifies the number of indexes, one for each BEGIN TRANSPORT command. Each index consists of an unsigned 8-bit index name length followed by the character index name followed by the index. The name must match the name contained in the BEGIN TRANSPORT parameter to which the index points. The index offset is expressed in bytes and is calculated relative to the BEGIN TFS command (beginning of the TFS) whose first byte has a value of 1 to the BEGIN TRANSPORT command. There must be an entry for each BEGIN TRANSPORT command in the TFS and the index must be to and inclusive of the first byte of those commands.

TABLE XI. TFS index command.

| MSB                |    |    |    |    |    |   |   |       |   |   |   |   |   |   | LSB |  |
|--------------------|----|----|----|----|----|---|---|-------|---|---|---|---|---|---|-----|--|
| 15                 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7     | 6 | 5 | 4 | 3 | 2 | 1 | 0   |  |
| TS                 |    |    |    |    |    |   |   | TSS   |   |   |   |   |   |   |     |  |
| CPL                |    |    |    |    |    |   |   |       |   |   |   |   |   |   |     |  |
| NUMBER_OF_INDEXES  |    |    |    |    |    |   |   |       |   |   |   |   |   |   |     |  |
| length = a         |    |    |    |    |    |   |   | C1    |   |   |   |   |   |   |     |  |
| C2                 |    |    |    |    |    |   |   | . . . |   |   |   |   |   |   |     |  |
| Ca                 |    |    |    |    |    |   |   | . . . |   |   |   |   |   |   |     |  |
| LONG_OFFSET_WORD_1 |    |    |    |    |    |   |   |       |   |   |   |   |   |   |     |  |
| LONG_OFFSET_WORD_2 |    |    |    |    |    |   |   |       |   |   |   |   |   |   |     |  |
| length = b         |    |    |    |    |    |   |   | C1    |   |   |   |   |   |   |     |  |
| C2                 |    |    |    |    |    |   |   | . . . |   |   |   |   |   |   |     |  |
| Cb                 |    |    |    |    |    |   |   | . . . |   |   |   |   |   |   |     |  |
| LONG_OFFSET_WORD_1 |    |    |    |    |    |   |   |       |   |   |   |   |   |   |     |  |
| LONG_OFFSET_WORD_2 |    |    |    |    |    |   |   |       |   |   |   |   |   |   |     |  |
| ...                |    |    |    |    |    |   |   |       |   |   |   |   |   |   |     |  |

5.1.3 Transport descriptor commands. The Transport Body Descriptor commands describe the functional content, security, and characteristics of the transport body.

5.1.3.1 Transport descriptor command table. The following table defines the TS, TSS, and the CPL for the Transport Descriptor commands. The value x for CPL indicates that a non zero value shall be used if there is data supplied with the command.

TABLE XII. Transport descriptor command.

| <b>TFS COMMAND NAME</b> | <b>TS</b> | <b>TSS</b> | <b>CPL</b> |
|-------------------------|-----------|------------|------------|
| TRANSPORT SECURITY      | 30        | 1          | x          |
| TRANSPORT METADATA      | 30        | 2          | x          |
| TRANSPORT INDEX         | 30        | 3          | x          |

5.1.3.2 Transport security command format. The TRANSPORT SECURITY command conforms to the same format as the TFS Delimiter commands with associated TS and TSS and non zero CPL; see tables III and IV.

5.1.3.3 Transport metadata command format. The TRANSPORT METADATA command conforms to the same format as the TFS Delimiter commands with associated TS and TSS and non zero CP; see tables III and IV.

5.1.3.4 Transport index command format. The TRANSPORT INDEX command provides a quick entry into the profiles contained in the Transport Body. The TRANSPORT INDEX command conforms to the same format as the TFS INDEX command with associated TS, TSS, and non zero CPL. The NUMBER\_OF\_INDEXES field is an integer field that specifies the number of indexes, one for each BEGIN PROFILE command. Each index consists of an unsigned 8-bit index name length followed by the character index name followed by the index. The name must match the name contained in the BEGIN PROFILE parameter to which the index points. The index offset is expressed in bytes and is calculated relative to the BEGIN TRANSPORT command whose first byte has a value of 1. There must be an entry for each BEGIN PROFILE command in the Transport Body and the index must be to and inclusive of the first byte of those commands; see table XI.

5.1.4 Profile descriptor commands. The Profile Descriptor commands describe the functional content, security, and characteristics of the profile.

5.1.4.1 Profile descriptor command table. The following table defines the TS, TSS, and the CPL for the Profile Descriptor commands. The value x for CPL indicates that a non zero value shall be used if there is data supplied with the command.

TABLE XIII. Profile descriptor command.

| <b>TFS COMMAND NAME</b> | <b>TS</b> | <b>TSS</b> | <b>CPL</b> |
|-------------------------|-----------|------------|------------|
| PROFILE SECURITY        | 40        | 1          | x          |
| PROFILE METADATA        | 40        | 2          | x          |
| PROFILE INDEX           | 40        | 3          | x          |

5.1.4.2 Profile security command format. The PROFILE SECURITY command conforms to the same format as the TFS Delimiter commands with associated TS and TSS and non zero CPL; see tables III and IV.

5.1.4.3 Profile metadata command format. The PROFILE METADATA command conforms to the same format as the TFS Delimiter commands with associated TS and TSS and non zero CPL; see tables III and IV.

5.1.4.4 Profile index command format. The PROFILE INDEX command provides a quick entry into the actions, objects, and embedded profiles contained in the Profile Body. The PROFILE INDEX command conforms to the same format as the TFS INDEX command with associated TS, TSS, and non zero CPL. The NUMBER\_OF\_INDEXES field is an integer field that specifies the number of indexes, one for each PROFILE COMMAND, PROFILE OBJECT, and BEGIN PROFILE command. Each index consists of an unsigned 8-bit index name length followed by the character index name followed by the index. The name must match the name contained in the PROFILE COMMAND, PROFILE OBJECT, or BEGIN PROFILE parameter to which the index points. The index offset is expressed in bytes and is calculated relative to the BEGIN PROFILE command whose first byte has a value of 1. There must be an entry for each PROFILE COMMAND, PROFILE OBJECT, and BEGIN PROFILE commands in the Profile Body and the index must be to and inclusive of the first byte of those commands; see table XI.

5.1.5 Profile commands. The Profile commands describe the individual objects contained in each profile.

5.1.5.1 Profile command table. The following table defines the TS, TSS, and the CPL for the Profile commands. The value x for CPL indicates that a non zero value shall be used if there is data supplied with the command.

TABLE XIV. Profile command.

| TFS COMMAND NAME | TS | TSS | CPL |
|------------------|----|-----|-----|
| PROFILE ACTION   | 50 | 1   | x   |
| PROFILE OBJECT   | 50 | 2   | x   |

5.1.5.2 Profile action command format. The PROFILE ACTION command conforms to the same format as the TFS Delimiter commands with associated TS and TSS and non zero CPL, see tables III and IV. The command shall be in the form "OBJECT\_NAME=action."

5.1.5.3 Profile object command format. The PROFILE OBJECT command provides a mechanism to reference all-source objects inside a profile for processing. Each object has a type followed by a name and then the specified data or a pointer to the data. The following is the PROFILE OBJECT command format. The OBJECT\_TYPE field is an integer that specifies the type of data. If OBJECT\_TYPE=1, then the object storage is given by the TFS Configuration Data command by the configuration service "OBJECT\_NAME=object\_storage." If OBJECT\_TYPE=2, then the object data is contained as a NITF component and that component number is given in the OBJECT\_DATA field. The next field is the length of the OBJECT\_NAME followed by the OBJECT\_NAME in characters (C1,C2, ..., Ca). The OBJECT\_STORAGE field is an integer that determines how the data is stored. If OBJECT\_STORAGE=0 then the object data is contained in the OBJECT\_DATA field or is a NITF component. If OBJECT\_STORAGE does not equal 0, then the storage for the object data is given in the OBJECT\_DATA field and was determined by the TFS Subscription command.

TABLE XV. Profile object command.

| MSB            |    |    |    |    |    |   |   |     |   |   |   |   |   |   | LSB |
|----------------|----|----|----|----|----|---|---|-----|---|---|---|---|---|---|-----|
| 15             | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7   | 6 | 5 | 4 | 3 | 2 | 1 | 0   |
| TS             |    |    |    |    |    |   |   | TSS |   |   |   |   |   |   |     |
| CPL            |    |    |    |    |    |   |   |     |   |   |   |   |   |   |     |
| OBJECT_TYPE    |    |    |    |    |    |   |   |     |   |   |   |   |   |   |     |
| length = a     |    |    |    |    |    |   |   | C1  |   |   |   |   |   |   |     |
| C2             |    |    |    |    |    |   |   | ... |   |   |   |   |   |   |     |
| Ca             |    |    |    |    |    |   |   | ... |   |   |   |   |   |   |     |
| OBJECT_STORAGE |    |    |    |    |    |   |   |     |   |   |   |   |   |   |     |
| OBJECT_DATA    |    |    |    |    |    |   |   |     |   |   |   |   |   |   |     |
| ...            |    |    |    |    |    |   |   |     |   |   |   |   |   |   |     |

5.1.5.3.1 NITF OBJECT DATA field contents. The following table describes the contents of the OBJECT\_DATA field for the OBJECT\_TYPE=2 (NITF components). The first entry is the name of the NITF object attribute followed by the TFS integer value for the NITF\_DISPLAY\_LEVEL. The NITF\_DISPLAY\_LEVEL (000-999) points to the associated Display Level data in the NITF file that contains the TFS.

TABLE XVI. OBJECT\_DATA for NITF profile object.

| MSB                |    |    |    |    |    |   |   |       |   |   |   |   |   |   | LSB |  |
|--------------------|----|----|----|----|----|---|---|-------|---|---|---|---|---|---|-----|--|
| 15                 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7     | 6 | 5 | 4 | 3 | 2 | 1 | 0   |  |
| length = a         |    |    |    |    |    |   |   | C1    |   |   |   |   |   |   |     |  |
| C2                 |    |    |    |    |    |   |   | . . . |   |   |   |   |   |   |     |  |
| Ca                 |    |    |    |    |    |   |   | . . . |   |   |   |   |   |   |     |  |
| NITF_DISPLAY_LEVEL |    |    |    |    |    |   |   |       |   |   |   |   |   |   |     |  |



5.1.5.3.2 OBJECT STORAGE and OBJECT DATA field contents. The following table describes the contents for the OBJECT\_STORAGE and associated OBJECT\_DATA fields for the PROFILE OBJECT command.

TABLE XVII. OBJECT STORAGE and OBJECT DATA format.

| OBJECT_STORAGE  | OBJECT_DATA (FORMAT)               |
|-----------------|------------------------------------|
| 0=METADATA ONLY | No object data                     |
| 1=TFS           | Object data stored in TFS or NITF  |
| 2=URL           | TFS string pointing to object data |

5.1.6 TFS escape command format. The TFS ESCAPE command conforms to the generic TFS command format with TS = 60, TSS = 10, and non zero CPL. This is an application specific command that is to be defined by an application profile.

## 6. NOTES

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

6.1. TFS example. The following TFS example contains two transports, AREA1 and AREA2. Both transports contain profiles with specific objects for each transport. However, they will share the same image as pointed to by the PROFILE OBJECT. TFS command parameters are delimited by quotes for this example.

```
BEGIN TFS "/Profile=NITFS-TFS/ NAME=AREA1 and AREA 2 coverage/
          DATE=19961104000000Z"
TFS VERSION "1"
TFS SECURITY "SECRET"
TFS METADATA "This TFS contains targeting information for AREA1 and AREA2"

BEGIN TRANSPORT "AREA1"
  TRANSPORT SECURITY "UNCLASSIFIED"
  TRANSPORT METADATA "Target and Imagery coverage for AREA1"
  BEGIN TRANSPORT BODY

    BEGIN PROFILE "TARGET 1 DATA"
      PROFILE SECURITY "UNCLASSIFIED"
      PROFILE METADATA "Parametric data for TARGET 1"
      BEGIN PROFILE BODY
        PROFILE OBJECT "Parametric data" (data for TARGET 1)
      END PROFILE

    BEGIN PROFILE "TARGET 1 IMAGERY"
      PROFILE SECURITY "UNCLASSIFIED"
      PROFILE METADATA "Imagery for TARGET 1"
      BEGIN PROFILE BODY
        PROFILE OBJECT "Imagery data" (pointer to NITFS component 001)
      END PROFILE
```

END TRANSPORT

BEGIN TRANSPORT "AREA2"

TRANSPORT SECURITY "SECRET"

TRANSPORT METADATA "Target and Imagery coverage for AREA2"

BEGIN TRANSPORT BODY

BEGIN PROFILE "TARGET 2 DATA"

PROFILE SECURITY "SECRET"

PROFILE METADATA "Parametric data for TARGET 2"

BEGIN PROFILE BODY

PROFILE OBJECT "Parametric data" (data for TARGET 2)

END PROFILE

BEGIN PROFILE "TARGET 2 IMAGERY"

PROFILE SECURITY "UNCLASSIFIED"

PROFILE METADATA "Imagery for TARGET 2"

BEGIN PROFILE BODY

PROFILE OBJECT "Imagery data" (pointer to NITFS component 001 (same as above))

END PROFILE

END TRANSPORT

END TFS

## 6.2 Subject term (key word) listing.

Image

Image compression

Image dissemination

Image transmission

Object data

Picture

Secondary Imagery Dissemination Systems

SIDS

Storage format

Symbols

Tag

## APPENDIX A

## TFS PROFILES AND CONFORMANCE

## A.1 SCOPE

This appendix provides the rules for defining valid profiles for the TFS. All TFS applications are required to conform to a valid profile. Profiles are used as a method for defining subsets of TFS by identifying the TFS commands, parameters, and implementation requirements necessary for satisfying a set of requirements. Profiles address TFS requirements as well as implementation requirements for TFS generators and TFS interpreters. Profiles define maximum requirements for generators and minimum requirements for interpreters. This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

## A.2 APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

## A.3 DEFINITIONS

The definitions in section 3 of this standard apply to this appendix.

## A.4 GENERAL REQUIREMENTS

A.4.1 TFS profiles and conformance objectives. The rules for defining valid profiles for TFS have the following objectives:

- a. To provide interoperability between applications by specifically defining constraints on the TFS.
- b. To provide a framework for developing TFS profiles.
- c. To provide a NITFS TFS model profile for use with a NITF file.
- d. To set uniform rules for the development of conformance tests.

A.4.2 NITFS TFS model profile. The NITFS TFS model profile is a usable instance of the TFS. It is required for all applications that use TFS for NITFS conformance. The NITFS TFS model profile is a starting point from which an application specific TFS profile should be defined. When creating a TFS profile, consideration should be given for each of the NITFS model profile specifications, and the specification should be accepted or modified only when it is not adequate.

A.4.3 Conformance of TFS profiles. A TFS profile shall meet all the requirements specified in this document. It shall not specify any requirement that would contradict or cause non-conformance to this document. A TFS profile may contain conformance criteria that restrict, limit, or add specific conditions to existing TFS requirements. The sequence of the TFS commands defined by the profile must be in accordance with the requirements defined in this document and not contain any other commands. All TFS profile metafiles shall be encoded according to the specifications of this document.

A.4.4 Conformance of TFS generators. Conformance of a TFS generator is defined by conformance to a TFS profile. It shall generate only the commands with the given requirements and

restrictions given by that profile. A TFS generator that conforms to the NITFS TFS model profile shall generate only the commands and restrictions given by the NITFS TFS model profile.

A.4.5 Conformance of TFS interpreters. Conformance of a TFS interpreter is defined by conformance to a TFS profile. It shall interpret all the TFS commands with the requirements and restrictions given by that profile. It shall interpret, and ignore if desired, any other TFS command not defined by the given TFS profile. A TFS interpreter that conforms to the NITFS TFS model profile shall interpret the commands and restrictions given by the NITFS TFS model profile and ignore, if desired, any other specification not defined by the NITFS TFS model profile.

## A.5 DETAILED REQUIREMENTS

A.5.1 NITFS TFS profile rules. The following table defines the NITFS TFS model profile and provides a mechanism for an application to define a unique TFS profile for conformance and certification. The first column indicates the entry number for compliance, the second column is the requirement or TFS command stated for compliance. The third column is the NITFS TFS model profile. Each condition is checked as Required, Optional, Conditional, or Prohibited. The fourth column is provided for the registration of new TFS profiles. The boxes must be checked appropriately and all restrictions for the given command must be explained.

TABLE A-1. Profile conformance.

| Table Entry Number | TFS Command or Specification | NITFS TFS Model Profile  | New Profile Specification   |
|--------------------|------------------------------|--|---|
| 1                  | Profile name                 | NITFS-TFS  | Must be a unique name not already registered.   |
| 2                  | BEGIN TFS                    | Required: <input checked="" type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Must be only one instance in metafile and be the first metafile command. The BEGIN TFS parameter shall contain the following data, delimited by the "/" character:<br>Profile=profile_name<br>NITFS-TFS for model profile,<br>Date=CCYYMMDDhhmmss as in NITFS MIL-STD 2500, and<br>Name="name of TFS". (case insensitive) | Same as model profile: <input checked="" type="checkbox"/><br>Restrictions:<br>Profile must include:<br>profile=profile_name,<br>date= CCYYMMDDhhmmss, and<br>name="name of TFS" delimited by the / character (case insensitive): |

TABLE A-1. Profile conformance - continued.

| Table Entry Number | TFS Command or Specification | NITFS TFS Model Profile   | New Profile Specification  |
|--------------------|------------------------------|---|--|
| 3                  | TFS VERSION                  | Required: <input checked="" type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Must be only one instance per metafile and be the second metafile command.   | Same as model profile: <input checked="" type="checkbox"/>   |
| 4                  | TFS SECURITY                 | Required: <input checked="" type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Must be only one instance per metafile and be the third metafile command. Security parameter must confirm to NITFS MIL-STD-2500 security fields. Classification must be equal to or greater than the value for each TRANSPORT SECURITY in the TFS. | Same as model profile: <input type="checkbox"/><br>Required: <input checked="" type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions: |
| 5                  | TFS METADATA                 | Required: <input type="checkbox"/><br>Optional: <input checked="" type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions: <input type="checkbox"/><br>Must clearly describe the contents or purpose of the TFS and its transport's contents.  | Same as model profile: <input type="checkbox"/><br>Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:            |
| 6                  | TFS INDEX                    | Required: <input type="checkbox"/><br>Optional: <input checked="" type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>When used, it contains each transport name with the byte offset from the beginning of the file to each BEGIN TRANSPORT.  | Same as model profile: <input type="checkbox"/><br>Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:            |

TABLE A-1. Profile conformance - continued.

| Table Entry Number | TFS Command or Specification | NITFS TFS Model Profile  | New Profile Specification   |
|--------------------|------------------------------|--|---|
| 7                  | TFS SUBSCRIPTION             | Required: <input type="checkbox"/><br>Optional: <input checked="" type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Used for requesting TFS to be delivered to user determined by the TFS SUBSCRIPTION parameters. Each object delivery can be defined. Example: XXX=1 defines that object XXX be delivered in the TFS file. There are three subscription options: 1=pull requested data, 2=subscribe to requested data, and 3=cancel subscription.   | Same as model profile: <input type="checkbox"/><br>Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions: |
| 8                  | TFS CONFIGURATION            | Required: <input type="checkbox"/><br>Optional: <input checked="" type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Used for providing TFS information or requesting TFS information. When requesting TFS information the TFS CONFIG DATA command must be present.  | Same as model profile: <input type="checkbox"/><br>Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions: |
| 9                  | TFS CONFIGURATION DATA       | Required: <input type="checkbox"/><br>Optional: <input checked="" type="checkbox"/><br>Conditional: <input checked="" type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>This command is conditionally required when the TFS CONFIGURATION contains 0 to indicate that configuration data is included. This command is optional otherwise. The TFS CONFIGURATION consist of OBJECT=SERVICE. For example, YYY=HTML. This indicates that an YYY object is of type HTML. It is up to the application to provide the Web browser to read YYY. | Same as model profile: <input type="checkbox"/><br>Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions: |

TABLE A-1. Profile conformance - continued.

| Table Entry Number | TFS Command or Specification | NITFS TFS Model Profile   | New Profile Specification  |
|--------------------|------------------------------|---|--|
| 10                 | TFS Descriptor Commands      | Restrictions:<br>All TFS Descriptor commands shall start after the BEGIN TFS command and end before the BEGIN TRANSPORT command.  | Same as model profile: <input checked="" type="checkbox"/>   |
| 11                 | BEGIN TRANSPORT              | Required: <input type="checkbox"/><br>Optional: <input checked="" type="checkbox"/><br>Conditional: <input checked="" type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Conditionally required when one or more profiles are to be transported. The BEGIN TRANSPORT parameter should include the name of the recipient.   | Same as model profile:   |
| 12                 | TRANSPORT SECURITY           | Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input checked="" type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Conditionally required when BEGIN TRANSPORT command present. Must be only one instance per transport and be the first command after the BEGIN TRANSPORT command. Security parameter must confirm to NITF Version 2.1 security fields. Classification must be equal to or greater than the value for each PROFILE SECURITY included in the transport. | Same as model profile: <input type="checkbox"/><br>Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input checked="" type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Conditionally required when BEGIN TRANSPORT command present and be the first metafile command after BEGIN TRANSPORT command. |
| 13                 | TRANSPORT METADATA           | Required: <input checked="" type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Must describe clearly the contents or purpose of the transport and its contents.   | Same as model profile: <input type="checkbox"/><br>Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:  |

TABLE A-1. Profile conformance - continued.

| Table Entry Number | TFS Command or Specification  | NITFS TFS Model Profile  | New Profile Specification   |
|--------------------|-------------------------------|--|---|
| 14                 | TRANSPORT INDEX               | Required: <input type="checkbox"/><br>Optional: <input checked="" type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>When used, it contains each profile name with the byte offset from the beginning of the BEGIN TRANSPORT command to each high level BEGIN PROFILE. | Same as model profile: <input type="checkbox"/><br>Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions: |
| 15                 | Transport Descriptor Commands | Restrictions:<br>All Transport Descriptor commands for the given transport shall start after the BEGIN TRANSPORT command and end before the BEGIN TRANSPORT BODY command.  | Same as model profile: <input checked="" type="checkbox"/>  |
| 16                 | BEGIN TRANSPORT BODY          | Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input checked="" type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Conditionally required for each BEGIN TRANSPORT command. It must be the first command after the Transport Descriptor commands.                    | Same as model profile: <input checked="" type="checkbox"/>  |
| 17                 | BEGIN PROFILE                 | Required: <input type="checkbox"/><br>Optional: <input checked="" type="checkbox"/><br>Conditional: <input checked="" type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Conditionally required when PROFILE ACTION or PROFILE OBJECT commands are present within the given profile state.                      | Same as model profile: <input checked="" type="checkbox"/>  |



TABLE A-1. Profile conformance - continued.

| Table Entry Number | TFS Command or Specification | NITFS TFS Model Profile  | New Profile Specification  |
|--------------------|------------------------------|--|--|
| 18                 | PROFILE SECURITY             | Required: <input checked="" type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input checked="" type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Conditionally required when BEGIN PROFILE command is present. Must be only one instance per profile and be the first command after the BEGIN PROFILE command. Security parameter must confirm to NITF Version 2.1 security fields. Classification must be equal to or greater than the value for each profile command included in the transport. | Same as model profile: <input type="checkbox"/><br>Required: <input checked="" type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions: |
| 19                 | PROFILE METADATA             | Required: <input type="checkbox"/><br>Optional: <input checked="" type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Must clearly describe the contents or purpose of the profile and its contents.  | Same as model profile: <input type="checkbox"/><br>Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:            |
| 20                 | PROFILE INDEX                | Required: <input type="checkbox"/><br>Optional: <input checked="" type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>When used, it contains each PROFILE ACTION, PROFILE OBJECT, or an embedded BEGIN PROFILE name with the byte offset from the beginning of the BEGIN PROFILE command to each next level command.  | Same as model profile: <input type="checkbox"/><br>Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:            |
| 21                 | BEGIN PROFILE BODY           | Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input checked="" type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Conditionally required for each BEGIN PROFILE command. It must be the first command after the Profile Descriptor commands.  | Same as model profile: <input checked="" type="checkbox"/>   |

TABLE A-1. Profile conformance - continued.

| Table Entry Number | TFS Command or Specification | NITFS TFS Model Profile   | New Profile Specification   |
|--------------------|------------------------------|---|---|
| 22                 | Profile Descriptor Commands  | Restrictions:<br>All Profile Descriptor commands for the given profile shall start after the BEGIN PROFILE command and end before the BEGIN PROFILE BODY command.   | Same as model profile: <input checked="" type="checkbox"/>  |
| 23                 | PROFILE ACTION               | Required: <input type="checkbox"/><br>Optional: <input checked="" type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>When used parameter must be in the form "OBJECT_NAME= action."<br>This command must be ignored and documented if not known to the application. | Same as model profile: <input type="checkbox"/><br>Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions: |
| 24                 | PROFILE OBJECT               | Required: <input type="checkbox"/><br>Optional: <input checked="" type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Contains OBJECT_TYPE 1 or 2, OBJECT_NAME, OBJECT_STORAGE 0 or 1 or 2, and OBJECT_DATA if OBJECT_STORAGE is not 0.                              | Same as model profile: <input type="checkbox"/><br>Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions: |
| 25                 | END PROFILE                  | Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input checked="" type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Must be only one instance per profile state and be the last command in the profile state.  | Same as model profile: <input checked="" type="checkbox"/>  |
| 26                 | END TRANSPORT                | Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input checked="" type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Must be only one instance per transport state and be the last command in the transport state.  | Same as model profile: <input checked="" type="checkbox"/>  |

TABLE A-1. Profile conformance - continued.

| Table Entry Number | TFS Command or Specification | NITFS TFS Model Profile   | New Profile Specification  |
|--------------------|------------------------------|---|--|
| 27                 | END TFS                      | Required: <input checked="" type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>Must be only one instance per metafile and be the last metafile command. | Same as model profile: <input checked="" type="checkbox"/>   |
| 28                 | TFS ESCAPE                   | Required: <input type="checkbox"/><br>Optional: <input checked="" type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions:<br>All TFS ESCAPE commands are ignored.                                     | Same as model profile: <input type="checkbox"/><br>Required: <input type="checkbox"/><br>Optional: <input type="checkbox"/><br>Conditional: <input type="checkbox"/><br>Prohibited: <input type="checkbox"/><br>Restrictions: <input type="checkbox"/> |
| 29                 | Nested Profiles              | Restrictions:<br>Nested profiles, profiles within profiles are allowed. Nested levels allowed: 10   | Same as model profile: <input type="checkbox"/><br>Restrictions: <input type="checkbox"/>  |
| 30                 | Number of Objects            | Restrictions:<br>There is no restriction to the number of objects as long as the file sizes of the TFS and NITFS comply within the certification conformance level.   | Same as model profile: <input type="checkbox"/><br>Restrictions: <input type="checkbox"/>  |
| 31                 | Number of Profiles           | Restrictions:<br>There is no restriction to the number of profiles as long as the file sizes of the TFS and NITFS comply within the certification conformance level.  | Same as model profile: <input type="checkbox"/><br>Restrictions: <input type="checkbox"/>  |
| 32                 | Number of Transports         | Restrictions:<br>There is no restriction to the number of transports as long as the file sizes of the TFS and NITFS comply with the certification conformance level.  | Same as model profile: <input type="checkbox"/><br>Restrictions: <input type="checkbox"/>  |

CONCLUDING MATERIAL

Custodians:

Army - AC  
Navy - OM  
Air Force - 90

Preparing activity:

Misc - MP

Agent:

Not applicable

Review activities:

OASD - DO, HS, IQ, IR, SO, WS  
Army - AR, CE, ET, IE, MD1, MI, PT,  
SC1, SC2, SC3, TI, TM  
Navy - AS, CG, CH, EC, MC, NC, ND,  
NO, MP, SA  
Air Force - 02, 09, 10, 11, 13, 16, 17, 19  
DLA - DH, ES  
Misc - DC1, DC5, DC7, DI, MP, NS, US

(Project INST-0017)

Civil agency coordinating activities:

USDA - AFS, APS  
COM - NIST  
DOE  
EPA  
GPO  
HHS - NIH  
DOI - BLM, GES, MIN  
DOT - OST  
NASA - NA  
National Communication Systems - NCS

# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

## INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
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### I RECOMMEND A CHANGE:

1. DOCUMENT NUMBER  
**MIL-STD-2302**

2. DOCUMENT DATE (YYMMDD)  
**960627**

### 3. DOCUMENT TITLE

**TRANSPORTABLE FILE STRUCTURE (TFS) FOR THE NATIONAL IMAGERY TRANSMISSION FORMAT STANDARD**

### 4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

### 5. REASON FOR RECOMMENDATION

### 6. SUBMITTER

a. NAME *(Last, First, Middle Initial)*

b. ORGANIZATION

c. ADDRESS *(Include Zip Code)*

d. TELEPHONE *(Include Area Code)*  
(1) Commercial  
(2) AUTOVON *(If applicable)*

7. DATE SUBMITTED  
(YYMMDD)

### 8. PREPARING ACTIVITY **NATIONAL IMAGERY AND MAPPING AGENCY**

a. NAME  
**Interoperability Branch (SEII)**

b. TELEPHONE *(Include Area Code)*  
(1) Commercial (2) AUTOVON

c. ADDRESS *(Include Zip Code)*  
**14675 Lee Road  
Chantilly, VA 20151-1715**

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